FSRA
Financial Services Regulatory Authority of Ontario

ARSF
Autorité ontarienne de réglementation des services financiers

www.fsrao.ca

Alternative Assets and Risk Management: Insights into Practices Observed from FSRA's Review of Six Large Public Sector Pension Plans in Ontario

November 10, 2021

25 Sheppard Avenue West
Suite 100
Toronto ON
M2N 6S6
Telephone: 416-250-7250
Toll free: 1-800-668-0128

25, avenue Sheppard Ouest
Bureau 100
Toronto (Ontario)
M2N 6S6
Téléphone: 416 250-7250
Sans frais: 1 800 668-0128

Executive summary

FSRA reviewed the risk management practices for alternative assets of the six largest public sector pension plans in Ontario. This asset class constitutes a material and strategically important part of their investment portfolios. Compared to traditional asset classes, alternative assets present additional risks to investors. Real estate, infrastructure and private equity are typically illiquid investments. Illiquidity affects their valuation and the performance of pension portfolios in meeting their on-going pension benefit liabilities. The risk management practices observed by FSRA reflect these issues and serve to identify leading practices. As part of its accountability to the sector, FSRA is sharing insights from the review to assist plan administrators in meeting their standard of care. FSRA recognizes the uniqueness of the public sector plans by their size and governance, risk management and investment expertise. Plan circumstances vary across the sector. Plan administrators need to address the risks of alternative assets in a proportionate manner appropriate for their plan. FSRA conducted its review in response to the International Monetary Fund's stability assessment of Canada's financial system and in furtherance of FSRA's priority to develop and consult on its prudential supervision framework.

Contents

Acknowledgements

FSRA thanks the following entities for their participation and generous assistance in FSRA's review of alternative asset management practices:

- Colleges of Applied Arts and Technology Pension Plan
- Healthcare of Ontario Pension Plan
- Investment Management Corporation of Ontario
- Ontario Municipal Employee Retirement System
- Ontario Pension Board
- OPSEU Pension Trust
- Ontario Teachers' Pension Plan

Ontario's six largest public sector plans plans have over 1.5 million members and over $475 billion of assets under management. They represent over 40% of all defined benefit (DB) pension members and 75% of all Ontario DB pension assets as of March 31, 2021. These plans are among the top investors globally in alternative assets. Three of the plans are among the largest 100 plans in the world. These Ontario plans are important constituents of the pension and capital markets ecosystem. They have extensive in-house investment and administration expertise. The plans are jointly governed by their employer and member stakeholders through independent board oversight.

1 Introduction

FSRA reviewed the risk management practices for alternative assets of the six largest Ontario public-sector pension plans (the "Public Sector Plans" or "Plans").[1] FSRA conducted the review in response to

[1] The reviewed plans were: Colleges of Applied Arts and Technology Pension Plan, Healthcare of Ontario Pension Plan, Ontario Municipal Employee Retirement System, Ontario Pension Board, OPSEU Pension Trust and Ontario Teachers' Pension Plan. Investment Management Corporation of Ontario also participated in the review in respect of its investment management activities for Ontario Pension Board.

the International Monetary Fund's stability assessment of Canada's financial system.[2] The review was also conducted as part of priority 8.2 "Develop and consult on prudential supervision framework" of FSRA's 2020 – 2023 Annual Business Plan.[3] This priority continues in the 2021 – 2024 Annual Business Plan.[4] FSRA's statutory objects for the pension sector are to: promote good administration of pension plans, and protect and safeguard the pension benefits and rights of pension plan beneficiaries. FSRA's work in surveying alternative asset practices furthers the sector's understanding of good pension plan administration and its assessment of how to safeguard pension benefits and rights. FSRA's supervisory work with the Public Sector Plans is ongoing. FSRA will continue to review their risk management and governance processes with respect to pension fund investments generally.

FSRA is sharing insights from the review as part of its accountability to the sector. Being collaborative, transparent and facilitative are among FSRA's supervisory guiding principles.[5] The Public Sector Plans are large and sophisticated plans. They have created practices that have evolved over a number of years for managing alternative asset investments. These practices reflect the underlying issues involved with alternative assets and serve to identify leading practices. With this report, FSRA seeks to inform the broader pension sector about these issues and practices, and to enable plan administrators to consider them, proportionately in the context of their plan circumstances, for meeting their standard of care.[6] As part of FSRA's ongoing supervisory activities in support of its statutory objects, alternative assets will remain one of the areas of focus for FSRA in its engagement with the Public Sectors Plans.

Prominent classes of alternative assets held by the Public Sector Plans are real estate, infrastructure and private equity.[7] These alternative assets present attractive investment characteristics for long-term investors (e.g., enhanced diversification, inflation protection, lower volatility and historically better risk-adjusted returns over the long term). Their illiquidity and other risk characteristics, however, introduce complexities and potential vulnerabilities to investment strategies. The standard of care applicable to

---

[2] The International Monetary Fund's 2019 Canada Financial System Stability Assessment highlighted the increasing risk profile for pension plans as they have expanded their exposures to alternative assets. https://www.imf.org/en/Publications/CR/Issues/2019/06/24/Canada-Financial-System-Stability-Assessment-47024.

[3] https://www.fsrao.ca/media/2006/download

[4] https://www.fsrao.ca/media/4051/download

[5] See FSRA's Pension Sector Guiding Principles at https://www.fsrao.ca/industry/pensions/regulatory-framework/guidance/pension-sector-guiding-principles.

[6] In addition to their common law fiduciary duties, section 22(1) and (2) of the Pension Benefits Act sets out the legislated standard of care for plan administrators and their agents for the administration and investment of the pension fund.

[7] Alternative assets are a class of assets other than conventional equity, debt and cash assets. They include private equity, private debt, real estate, infrastructure, hedge funds, distressed securities, commodities, exchange funds, carbon credits, financial derivatives and cryptocurrencies. They also include precious metals, art, antiques and coins.

plan administrators requires them to understand and manage these risks. A plan's investment strategy should provide sufficient liquidity under a range of plausible scenarios. Plans need to be able to pay liabilities as they fall due. FSRA recognizes that the practices described in this report have been developed by large plans with significant in-house risk management and investment capabilities. FSRA expects plan administrators of smaller plans to understand and address the risks of alternative assets in a manner appropriate for their plans, including through the retention of external advisors.

2 Alternative asset investments of the Public Sector Plans

Alternative assets comprise a material and strategically important component of the Public Sector Plans' investment portfolios:

- Investments in alternative assets by the Plans grew at an average rate of 10% per annum between the ends of 2010 and 2020. The investments totaled $187 billion and constituted 37% of net pension fund investments as of December 31, 2020. Growth occurred through capital appreciation and new investment.

- Allocations to alternative assets varied between 25% to 50% of each plan's net invested assets as of December 31, 2020.

- Real estate and infrastructure investments constituted on average approximately two-thirds of the Plans' alternative asset allocations. These "real" (brick and mortar) assets typically delivered returns of CPI plus a spread of 3% to 4%. The Plans indicated they use them as a long-term hedge to inflation-linked liabilities. Private equity investments constituted the remaining third.

- The Plans invested in alternative assets directly (internally managed) and/or through external managers. External management includes co-investment arrangements and funds.

The plans indicated they have no immediate plans to reduce their allocations to alternative assets. Some indicated they intend on increasing their allocations.[8]

Covid-19 and the related market volatility in 2020 presented challenges for alternative asset investment strategies. FSRA's review found that the alternative assets of the Public Sector Plans generally performed well for the year ending 2020. This observation complements findings of the Bank of Canada in its Staff Analytical Note into liquidity management by large pension plans amid the Covid-19 crisis.[9] The Bank of Canada found the plans experienced significant liquidity demands in March 2020 but were generally resilient in meeting these demands through a variety of strategies. The Bank of Canada had linked increasing allocations to illiquid assets and, in some cases, use of leverage and derivatives with a rise in liquidity risk.[10]

3 Risks associated with alternative assets

FSRA expects the pension sector's interest in alternative assets will continue. The persistently low interest rate environment and the potential for an inflationary period are additional factors that increase the attractiveness of alternative asset strategies. These strategies, however, come with complexities that introduce additional risks to plans.

The illiquidity of alternative assets, such as private equity, real estate and infrastructure, and the absence of a ready secondary market affect their valuation. These factors also impact investment exit strategies, especially if an asset needs to be sold quickly under less favourable market conditions than when it was purchased. Investments in alternative assets can involve more complicated investor covenants. Examples include lock-up periods and other redemption restrictions as well as investee

---

[8] This picture of the growth and prevalence of alternative assets is consistent with trends identified by the Bank of Canada. In its review of 128 federally regulated private pension plans, the Bank of Canada found that pension portfolios shifted between 2004 and 2018 to include a greater allocation to alternative assets such as real estate, infrastructure and private equity. The Bank of Canada found that pension portfolios also shifted to an increased allocation to bonds over this period. The Bank of Canada also noted that plan size was a key driver in the portfolio shifts and that larger plans have a greater ability to invest in alternative assets than smaller plans. This point coincides with FSRA's observation below that plan size corresponds with the degree of direct investment. It also coincides more generally with the observation that alternative assets present additional risks for plans to have practices in place to understand and manage. See Staff Analytical Note, "Reaching for yield or resiliency? Explaining the shift in Canadian pension plan portfolios" (August 2021) at https://www.bankofcanada.ca/2021/08/staff-analytical-note-2021-20/.

[9] See "Covid-19 crisis: Liquidity management at Canada's largest public pension funds" (May 2021) at https://www.bankofcanada.ca/2021/05/staff-analytical-note-2021-11/.

[10] FSRA is also looking at the liquidity risk practices of the Public Sector Plans as part of FSRA's on-going supervisory work into investment risk management and governance processes.

options to make capital calls on investors. Alternative assets are typically sold on an exempt-basis from the protections afforded to publicly traded securities (e.g., reporting issuer obligations under securities laws). Overall transaction and governance costs tend to be higher with alternative assets.

Plan administrators accordingly need to understand and manage the risks of alternative assets as appropriate for their individual plan size and other circumstances. As illustrated by the practices of the Public Sector Plans, plan administrators should be satisfied with the:

- financial models used in valuing alternative assets and the related model risks (see 4.1 *Valuation and Model Risk*)
- impact of alternative assets to asset-liability management and the ability and sustainability of their plans to deliver the promised benefits (see 4.2 *Asset-Liability Management*)
- potential impacts of stress events on the performance of the alternative assets and overall portfolio (see 4.3 *Stress Testing*)
- other risk and liquidity management practices of their plans specific to alternative assets (see 4.4 *Risk and Liquidity Management*)
- integration of alternative assets into their plan's overall controls and governance environment

The risks of alternative assets raise disclosure considerations for plan administrators. This includes appropriate disclosure in the investment information summary and statement of investment policies and procedures. In addition, alternative assets may lead plan stakeholders to desire further information to understand changes in the plan's risk profile. For example, such information may support changes in the funding policy or inform a change in an employer's contribution risk under unfavourable scenarios. An emerging issue for disclosure practices is the potential impact of climate change on investments. Climate change may have heightened relevance for real assets such as real estate and infrastructure.

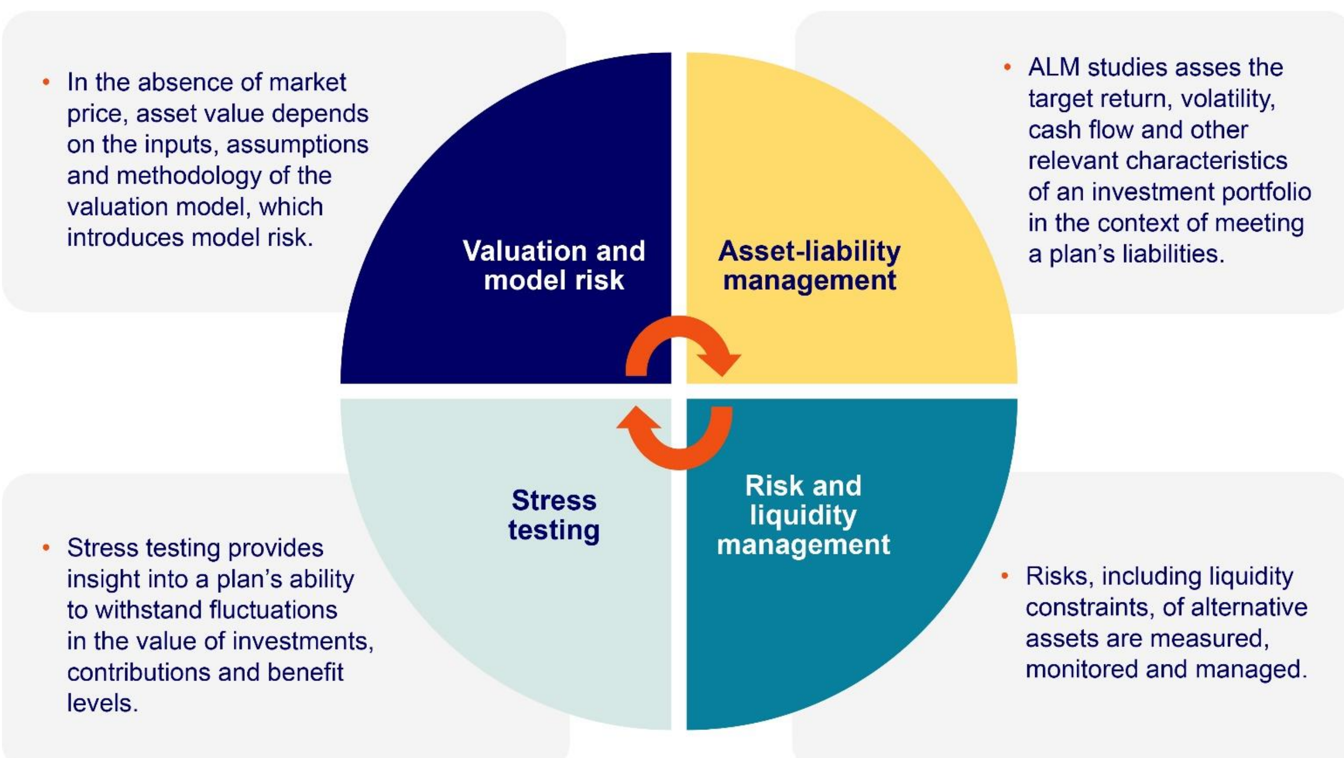
Externally managed funds are a way for plans of different sizes to invest in alternative assets. The Appendix sets out examples of questions for administrators to consider if contemplating an investment in an externally managed fund. These questions arise from the insights gained through FSRA's review of the Public Sector Plans.

4 Alternative asset risk management practices of the Public Sector Plans

The following diagram provides a high-level overview of the alternative asset risk management practices of the Public Sector Plans. While the practices are illustrated as separate components, in operation they are inter-connected. The Plans vary in their specific practices. The Plans also vary in the degree in which they invest directly or through external managers. Whether and to what extent the practices described below may be relevant to other plans in the sector depends on their utility in the context of specific plan circumstances.

FSRA observed that plan size generally correlates with greater use of direct investment. Direct, internally managed investment provides greater control. It also requires a high level of expertise, due diligence, governance controls and engagement by a plan. The governance frameworks of the Plans with a larger complement of internally managed assets generally included more developed challenge and control processes.

The Plans exhibited a separation and articulation of duties internally (e.g., risk and investment). They engaged external advisors when they considered appropriate. Board expertise and engagement is also an important component in setting the governance framework.



4.1 Valuation and model risk

Because alternative assets such as real estate, infrastructure and private equity are traded infrequently, if at all, they typically do not have reliably accurate market prices. Investors therefore estimate their value through financial modelling. Two key issues arise with estimating value: a) the frequency of valuation, and b) model risk. Model risk is the risk of inaccurate methodologies or assumptions causing an asset to be over or undervalued. The result is an unrealistic view of the financial position, performance and funding requirements of the plan.

To address these issues, the Public Sector Plans have adopted written valuation policies. These policies set out the frequency of valuation. They identify the internal team(s)/individuals qualified to perform the valuation and the criteria for involving external advisors. The policies also describe the inputs, assumptions and methodology used in the valuation model and the frequency by which these are reviewed.

4.1.1 Valuation of internally managed investments

Function	Leading Practice
Valuation	• Qualified internal staff review the valuation model and establish criteria (e.g., materiality thresholds) to triage assets for review by external advisors. The use of external advisors provides an additional control to validate the valuation. • Asset valuation is reviewed at least semi-annually and updated as required.
Model risk management	• Key valuation models are validated on an annual basis to ensure their accuracy and appropriateness for deployment. The scope of model validation includes the inputs, assumptions and methodologies used. The details of the valuation models and the model validation results are documented. • External advisors provide enhanced model risk oversight for complex valuation models or material assets. • A profit and loss attribution process is established. It explains and links the key drivers of the valuation changes to the relevant risk factors (e.g., changes in cash

flow, interest rates, discount rates, capitalization rates by region and foreign-exchange rates). This process serves as an ongoing verification and reasonableness check of the value produced by the model.

4.1.2 Valuation of externally managed funds

Function	Leading Practice
Valuation	• Valuation practices of the external manager are reviewed as part of initial due diligence. • The valuation of at least a portion of the externally managed assets is reviewed periodically. The review is based on key criteria (e.g., materiality, valuation changes). A separate performance monitoring process ensures that changes in asset value are tracked and consistent with underlying market conditions.
Model risk management	• Initial due diligence and ongoing engagement thereafter reviews the manager's valuation model policy and the effectiveness of its model risk controls. • A benchmark model is developed by the plan to provide a proxy valuation in the context of co-investment structures. The plan can then monitor any differences between the proxy value and the value from the external manager of the co-investment.

4.2 Asset-liability management

Asset-liability management ("ALM") studies assess the ability of a pension fund's investment portfolio to satisfy the plan's promised benefits. Portfolio characteristics such as target return and anticipated volatility and cash flow are considered. ALM studies assist plans in generating an appropriate strategic allocation to alternative assets. They also assist in understanding the opportunities and potential vulnerabilities of alternative asset strategies under a number of scenarios. ALM studies in turn inform an understanding of the plan's funded status and ability to absorb future fluctuations in funding contributions. They inform an understanding of how the investment portfolio fits within the plan's risk appetite.

Function	Leading Practice
ALM study	• A comprehensive ALM study is conducted at least tri-annually or when significant factors change (e.g., changes in demographics, pension benefits, assumptions and funding objective/strategy). The study validates or prompts reconsideration of the fund's allocation to alternative assets. • Inputs, assumptions, models and results in respect of alternative assets are reviewed independently of the persons who produced the ALM study. • Key assumptions, adjustments to inputs and expert judgment overlay in respect of the alternative assets are clearly explained and documented. Doing so assists in better understanding the factors affecting risk and return. • ALM studies and their insights into alternative asset strategies are included in board presentations in support of its oversight activities.

4.3 Stress testing

Stress testing is an evaluative technique to assess the resiliency of a plan's investments and overall risk profile. A range of forward-looking scenarios are used to see how the alternative assets would perform. Scenarios include historical, emerging and extreme but plausible hypothetical stress events. The testing provides insights into potential vulnerabilities, which plan administrators can address in their risk and investment decision-making.

Function	Leading Practice
Granularity of the stress test analysis	• Inputs or key drivers in the valuation model for alternative assets (e.g., discount rates, inflation, capitalization rates) are tested jointly and individually. This level of granularity enhances the sensitivity of the stress results than if only broad asset-class-based assumptions (e.g., X% decline in alternative assets) were tested. This sensitivity enables attribution analysis. This links the stress results to the

		specific risk and valuation drivers of the alternative assets. It also provides flexibility for building more customized testing scenarios.
Application	•	Stress testing is incorporated into due diligence before making an alternative asset investment. It provides additional insight into the risk and return profile of the investment.
	•	Stress testing occurs on an ongoing basis for alternative asset investments. The insights inform investment and risk oversight decisions for maintaining, increasing and decreasing exposure to alternative assets. Stress testing assists with board oversight of the risk and performance of alternative assets. The frequency of stress testing is affected by the relative importance of alternative assets to the overall portfolio. Frequency is also affected by their volatility and broader market changes or developments that affect their valuation.

4.4 Risk and liquidity management

The relevant risks of the alternative assets are measured, monitored and managed. Aggregating individual asset risks provides insight into overall portfolio risks. It also provides insight into the marginal risk incurred by the portfolio with individual assets.

Function	Leading Practice
Risk assessment tools	• Internal risk ratings are considered for individual assets. Doing so provides a way to integrate how individual asset risks affect the portfolio risk assessment. Practices for assigning ratings vary (e.g., marginal VaR, credit rating methodology). Rating practices depend on the plan's investment beliefs and views on individual assets.
Risk control activities	• The risk management activities specific to alternative assets are set within each plan's governance function. This ensures the effective separation of duties, controls and oversight. For example, governance functions can include a minimum of three lines (1st line risk owners, 2nd line risk management oversight,

	3rd line audit/controls over risk processes) with oversight/challenge at the board level. • A centralized risk control team is established. It is adequately resourced and knowledgeable about alternative assets (e.g., the risk-reward trade-offs, their fit within the larger strategy, valuation and model risks). The risk control team is separate from the investment team. It has a channel to report independently to senior management and the board.
Policies and procedures	• A range of acceptable levels of risk for alternative assets is established. This allows investments to be made within acceptable risk tolerances for the portfolio. • A liquidity management process is established. This ensures that high-quality liquid assets are available to meet potential cash demands. Appropriate, conservative time horizons are used. The potential for severe events (e.g., 2008 financial crisis, 9/11) that would freeze short-term funding markets is also accounted for.[11]

5 Conclusion

Alternative assets constitute an important investment strategy of the Public Sector Plans. The Plans had invested $187 billion in alternative assets as of December 31, 2020. This comprised 37% of their aggregate net assets. This scale speaks to the utility of alternative assets for meeting long-term investment needs. Alternative assets also come with risks, particularly as they relate to illiquidity. These risks have led the Public Sector Plans to put additional controls, policies and mitigants in place, and adjust their internal structures and governance.

As Covid-19 has illustrated, low probability but high impact events do occur. These events can stress liquidity and valuations. Investment illiquidity highlights the importance of having effective risk management practices. These include thorough due diligence before making an investment. They include knowing how the potential impacts of plausible stress events (moderate and severe) fit within

[11] Further to footnote 10, FSRA's expects to trial a liquidity metric with the Public Sectors Plans in the fall of 2021. It is expected the metric will provide a common measurement for plans and evolve over time.

accepted risk tolerances. They also include having mechanisms in place to monitor and adjust to changes in risk over time. In this regard, climate change heightens the importance of risk management, especially in respect of illiquid real assets that are vulnerable to physical and transition risks.

FSRA expects the use of alternative assets by the pension sector to continue and evolve. Externally managed funds of alternative assets facilitate investment by plans of different sizes. To assist plan administrators with investing in externally managed opportunities, the Appendix sets out questions to consider for meeting their standard of care. Similarly, the insights summarized in this report can assist all plans to self-assess. FSRA recognizes the diversity of plan sizes and circumstances in the sector. FSRA expects plan administrators address the risks of alternative assets, in a proportionate manner appropriate for their plans, to meet their standard of care.

FSRA will continue its supervisory activities with respect to the Public Sector Plans and investment risk management and governance. This work is further to its mandate – to promote the good administration of pension plans and protect and safeguard pension benefits and rights – and its business plan priority to develop and consult on prudential supervision framework issues.

Appendix

Questions to consider for investment in externally managed funds of alternative assets

The following questions are, at a high-level, examples of the kinds of questions plan administrators should consider in their due diligence of externally managed, alternative-asset investments. The questions are intended to assist plan administrators with meeting their standard of care by identifying issues to consider in assessing the potential risks of alternative assets. The questions are not intended to exhaust all potentially relevant considerations when making an investment. Nor are they intended to be understood as representative of the due diligence practices of the Public Sector Plans.

The specific due diligence questions for any investment will depend on the investment and its relation to a plan's overall investment portfolio. Due diligence should be conducted by qualified individuals with knowledge of the relevant legal, tax, accounting and finance issues. As illustrated by the Public Sector Plans, ALM studies and stress testing can also be important aspects of due diligence. These tools can provide insight into the range of potential outcomes of the investment portfolio under various scenarios. They can also provide insight for selecting the kind and amount of portfolio assets to re-allocate to alternative assets.

1. What are the opportunities or primary objectives of the alternative asset investment (e.g., excess returns, capturing an illiquidity premium, portfolio diversification, inflation hedge)?

2. What are the financial risks associated with the investment? What potential vulnerabilities do these risks introduce to the pension fund's investment strategy? Can these potential vulnerabilities be managed? How frequently should the risks and related management practices be reviewed?

3. Is the potential impact of the alternative assets on the ability of the investment portfolio to pay pension benefits understood? Are moderate and severe stress events, the illiquidity of the investment and any redemption restrictions as well as potential fluctuations in funding contributions accounted for?

4. Are all relevant fees considered in the investment analysis, e.g., transactional, risk management and governance, administration, and management and performance fees?

5. In respect of the investment mandate, manager and fund portfolio:

    a. What is the investment mandate and criteria for buying or selling assets? How transparent can the investment manager be in sharing information about underlying investments?

b. How diversified is the alternative asset portfolio? This can include asset classes (real estate, infrastructure, private equity, etc.), sectors within asset classes, size and geography.

c. How does the investment manager assess the quality of an investment, e.g., investment grade, projected revenues and expenses, volatility of returns, re-sale ability? Are environmental, social and governance factors considered?

d. How does the investment manager use leverage in the portfolio?

e. What is the investment manager's track record?

f. Does the manager stress test its portfolio? What scenarios are used? How are these results integrated into investment strategy and decision-making?

g. How often are the alternative assets valued? What controls does the investment manager use to give confidence in its valuation? Who performs the valuation? Is it independently or externally verified? How do changes in valuation affect any periodic rebalancing of the portfolio? What level of transparency and disclosure does the investment manager provide into its valuation and model risk processes?

6. Does the plan's statement of investment policies and procedures (SIPP) need to be updated to permit the investment? Is the investment compliant with the investment requirements of the *Pension Benefits Act*? Do other governing documents (e.g., funding, risk management and liquidity policies) need to be updated? Will the investment manager agree to comply with the SIPP or other plan requirements, either in its standard investment agreements or through a side letter?

7. Does the plan have sufficient resources (internally or externally) to manage the alternative asset? This includes any potentially additional risk management practices but also administrative activities (e.g., tax reporting in foreign jurisdictions).